

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) An electrical connector comprising:
a linear contact array of electrically conductive contacts; and
a lead frame in ~~into~~ which the contacts are fixed ~~at least partially extend~~;
wherein the contacts may be selectively designated, while fixed in the lead frame, as
either ground or signal contacts such that, in a first designation, the contacts form at least one
differential signal pair comprising a pair of signal contacts, and, in a second designation, the
contacts form at least one single-ended signal conductor.
2. (Original) The electrical connector of claim 1, wherein the contacts may be selectively
defined such that, in a third designation, the contacts form at least one differential signal pair
and at least one single-ended signal conductor.
3. (Original) The electrical connector of claim 1, wherein the contact array includes at least
one ground contact disposed adjacent to the at least one differential signal pair in the first
designation and adjacent to the at least one single-ended signal conductor in the second
designation.
4. (Original) The electrical connector of claim 3, wherein the ground contact is disposed in
the same relative location within the contact array in both the first designation and the second
designation.
5. (Original) The electrical connector of claim 4, wherein each signal contact has a
respective terminal end and wherein a terminal end of the ground contact extends beyond any
terminal end of any of the signal contacts.
6. (Currently amended) The electrical connector of claim 1, further comprising:
a second linear contact array of electrically conductive contacts; and
a second lead frame into which the contacts of the second linear array are fixed ~~at
least partially extend~~,

wherein the contacts of the second linear array may be selectively designated, while fixed in the lead frame, as either ground or signal contacts such that, in a third designation, the contacts form at least one differential signal pair comprising a pair of signal contacts, and, in a fourth designation, the contacts form at least one single-ended signal conductor.

7. (Currently amended) The electrical connector of claim 6, wherein cross-talk between signal contacts in the first linear array and signal contacts in the second linear array is limited to below a desirable predefined level.

8. (Original) The electrical connector of claim 7, wherein the second lead frame is disposed adjacent to the first lead frame, and wherein the cross-talk is limited as a result of a configuration of the contacts.

9. (Original) The electrical connector of claim 8, wherein the cross-talk is limited as a result of a ratio of contact width to a gap width between adjacent contacts.

10. (Original) The electrical connector of claim 8, wherein the cross-talk is limited in the absence of any shield plate between the first and second lead frames.

11. (Original) The electrical connector of claim 8, wherein the contacts in the first linear contact array that are designated as signal contacts produce a relatively low electric field near the contacts in the second linear array that are designated as signal contacts.

12. (Original) The electrical connector of claim 11, wherein the differential signal pair of signal contacts includes a gap between them, and wherein the signal pair produce a relatively high electric field in the gap and a relatively low electric field near an adjacent signal contact.

13. (Original) The electrical connector of claim 12, wherein the adjacent signal contact is in the first linear contact array.

14. (Original) The electrical connector of claim 12, wherein the adjacent signal contact is in an adjacent linear contact array.

15. (Original) The electrical connector of claim 14, wherein the adjacent linear contact array is staggered relative to the first linear contact array.
16. (Original) The electrical connector of claim 1, wherein the differential signal pair has a differential impedance of about 90-110 ohms.
17. (Original) The electrical connector of claim 1, wherein the single-ended signal conductor has a single-ended impedance of about 40-70 ohms.
18. (Original) The electrical connector of claim 1, wherein at least one of the differential signal pair contacts has an insertion loss of less than about 0.7 dB at approximately 5 GHz.
19. (Original) The electrical connector of claim 1, wherein multi-active near-end cross-talk measured at the differential signal pair is less than about three percent at approximately forty picoseconds and 10-90 percent rise time.
20. (Original) The electrical connector of claim 1, wherein multi-active near-end cross-talk measured at the single-ended signal conductor is less than about five to eight percent at approximately 150 picoseconds and 20-80 percent rise time.
21. (Original) The electrical connector of claim 1, wherein multi-active far-end cross-talk measured at the differential signal pair is less than about four percent at approximately forty picoseconds and 10-90 percent rise time.
22. (Original) The electrical connector of claim 1, wherein multi-active far-end cross-talk measured at the single-ended signal conductor is less than about three percent at approximately 150 picoseconds and approximately 20-80 percent rise time.
23. (Original) The electrical connector of claim 1, wherein there is limited crosstalk within a column.

24. (Original) The electrical connector of claim 1, wherein crosstalk is limited as a result of a ratio of contact width to a gap width between adjacent contacts.

25. (Original) The electrical connector of claim 1, wherein at least one of the single ended signal conductors has an insertion loss of less than about 2 dB at approximately 4 GHz.

26-27. (Canceled)

28. (Currently amended) An electrical connector comprising:

first and second signal contacts; and
a lead frame in which the ~~adapted to receive~~ first and second signal contacts are fixed,
wherein the signal contacts may be selectively ~~defined~~ designated, while fixed in the
lead frame, in either of a first designation and a second designation such that, in the first designation, the signal contacts form a differential signal pair, and, in the second designation, the first signal contact is a single-ended signal conductor.

29. (Currently amended) The electrical connector of claim 28, further comprising wherein
~~the lead frame is adapted to receive~~ a ground contact adjacent to the first signal contact.

30. (Original) The electrical connector of claim 29, wherein, in the second designation, the first signal contact forms a single-ended pair with the ground contact.

31. (Currently amended) The electrical connector of claim 28, further comprising wherein
~~the lead frame is further adapted to receive~~ a third signal contact that is a single-ended signal conductor.

32. (Original) The electrical connector of claim 28, further comprising wherein the lead
~~frame is further adapted to receive~~ third and fourth signal contacts that form a second differential signal pair.

33. (Currently amended) A method for connecting an electrical connector to a circuit board, comprising:

providing an electrical connector comprising ~~a linear contact array of~~ first and second electrically conductive contacts and a lead frame ~~into~~ in which the contacts ~~at least partially extend~~ are fixed, wherein each of the first and second electrical contacts may be selectively designated, while fixed in the lead frame, as either a ground contact or a signal contact such that, in a first designation, the contacts form at least one differential signal pair comprising a pair of signal contacts, and, in a second designation, the contacts form at least one single-ended signal conductor;

designating each of the first and second electrical contacts as either a ground contact or a signal contact ~~contacts~~; and

electrically connecting the electrical connector to the circuit board having at least one signaling path.

34. (Original) The method of claim 33, further comprising:

electrically connecting a contact designated as a signal contact to a signaling path on the circuit board.

35. (Original) The method of claim 34, wherein the signal path is a single-ended signaling path.

36. (Original) The method of claim 34, wherein the signal path is a differential signaling path.

37. (Original) The method of claim 33, further comprising:

designating the contacts such that the contacts form at least one differential signal pair comprising a pair of signal contacts.

38. (Original) The method of claim 33, further comprising:

designating the contacts such that the contacts form at least one single-ended signal conductor.

39. (Original) The method of claim 33, wherein the electrical connector comprises a third electrically conductive contact fixed in the lead frame that may be selectively designated, while fixed in the lead frame, as either a ground contact or a signal contacts contact, the method further comprising:

designating the contacts such that the contacts form at least one differential signal pair comprising a pair of signal contacts and at least one single-ended signal conductor.

40. (Currently amended) A system, comprising:

a circuit board having at least one signaling path; and
an electrical connector comprising a linear contact array of electrically conductive contacts and a lead frame in ~~into~~ which the contacts are fixed ~~at least partially extend~~, wherein the contacts may be selectively designated, while fixed in the lead frame, as either ground or signal contacts such that, in a first designation, the contacts form at least one differential signal pair comprising a pair of signal contacts, and, in a second designation, the contacts form at least one single-ended signal conductor,

wherein the electrical connector is electrically connected to the circuit board.

41. (New) An electrical connector comprising:

a lead frame,
a first electrical contact fixed in the lead frame;
a second electrical contact fixed in the lead frame adjacent to the first electrical contact; and
a third electrical contact fixed in the lead frame adjacent to the second electrical contact;

wherein the first, second, and third electrical contacts are electrically isolated from one another such that each of the first, second, and third electrical contacts can be selectively designated, while fixed in the lead frame, as either a signal contact or a ground contact.

DOCKET NO.: FCI-2714/C3549
Application No.: 10/634,547
Office Action Dated: January 18, 2005

PATENT
REPLY FILED UNDER EXPEDITED
PROCEDURE PURSUANT TO
37 CFR § 1.116

42. (New) A method for manufacturing an electrical connector, the method comprising:

providing a connector housing;

securing into the connector housing a lead frame having fixed therein a first electrical contact, a second electrical contact adjacent to the first electrical contact, and a third electrical contact adjacent to the second electrical contact, wherein the first, second, and third electrical contacts are electrically isolated from one another such that each of the first, second, and third electrical contacts can be selectively designated, while fixed in the lead frame, as either a signal contact or a ground contact.